

Remarks

Claims 1-28 are pending with this paper. Claims 1-26 stand rejected. Applicant is adding claims 27 and 28. Applicant is amending independent claims 1, 12, and 26.

Applicant acknowledges the withdrawal of the objections to claims 13-17 and 22. Applicant's previous arguments with respect to claims 1-26 have been considered but are moot in view of the new grounds of rejection.

Other Amendments

Applicant is amending claim 26 to replace "a corresponding operative filter" with "a corresponding operative notch filter." The amendment is supported by the specification as originally filed, e.g., Paragraph 22.

Claim Rejections – 35 U.S.C. § 103

Claims 1-11 are rejected by the Office Action under 35 U.S.C. 103(a) as allegedly being unpatentable over the combination of US 5,506,910 (Miller) and US 5,119,428 (Prinssen).

Applicant is amending claim 1. As amended, claim 1 includes the features of "a communications pathway between the first channel element and the second channel element, wherein one of the channel elements informs another channel element about detecting acoustic feedback by providing determined filter parameters, wherein the determined filter parameters characterize the acoustic feedback, and wherein the other channel element may continue searching for an associated acoustic feedback component while said one of the channel elements configures in accordance with the determined filter parameters." (Emphasis added.)

The amendment is supported by the specification as originally filed, e.g., Paragraphs 30-31.

The Office Action alleges that (Page 2, section 4.):

Regarding claim 1, Miller teaches a first channel element and a second channel element with a communication pathway in a multi-channel acoustic system (Col. 7, lines 9-19, lines 33-36, lines 42-47, and lines 52-57 and Fig. 5, units 20a, 20b, 40a, and 40b). However Miller does not teach two microphones with associated acoustic sources on one performance stage.

Miller discloses a live performance amplification system (Column 7, lines 32-50. Emphasis added.)

A stereo variation of the live performance amplification system is shown in FIG. 5. The mixer 24 produces respective left and right program signals 70a and 70b which are equalized by respective automatic equalizers 20a and 20b. The equalized program signals are then amplified by power amplifiers 34a and 34b and broadcast on left and right speaker systems 36a and 36b to the audience. Separate reference pickups 40a and 40b are suitably positioned on the left and right of the auditorium to test the frequency response of the corresponding channel. **A communication and control link 72 connects the automatic equalizers 20a and 20b for arbitrating and/or synchronizing the testing frequency generation and response analysis, either so that audio reference signals are generated either simultaneously or non-simultaneously in both channels.** Simultaneous deep narrow notch filtering of the program signal to eliminate program frequencies in both channels A and B during adding of a narrow band reference frequency signal is also controlled through the link 72.

As shown in fig. 5 and disclosed in Miller, control link 72 merely provides information for equalizers 20a-20b and/or generating audio reference signals. (Equalizers 20a-20b equalize the channel responses so that the measured response approximately equals the desired response as shown in fig. 2 of Miller.) However, Miller fails to even suggest using control link to provide information for feedback elimination.

Claims 2-11 ultimately depend from claim 1 are not anticipated for at least the above reasons. Applicant requests for reconsideration of claims 1-11.

Moreover, claim 3 includes the feature of **“a first operative notch filter that attenuates the first acoustic feedback component as instructed by the first adaptive notch filter or the**

second channel element.” (Emphasis added.) The Office Action alleges that (Page 3, section 3):

... The fact that Miller teaches that the multiband control unit can be any device that would have these desirable features, it is inherent that the multiband control unit can be 31 notch filters, which would be automatically controlled.

The Office Action alleges that multiband gain control unit 32 (as shown in fig. 1) may be a bank of 31 notch filters as suggested by Miller. However, Miller fails to even suggest any interaction between the notch filters in the bank of notch filters. Moreover, Miller merely suggests that multiband gain control unit 32 may be any device (e.g., a digital filter or analog filter) in order to implement filter characteristics. Applicant respectfully disagrees that combining a thirty-one band filter for controlling filter ripple with a device that can be automatically controlled to vary the gain (as disclosed by Miller in column 4, lines 21-46) inherently implies the alleged bank of notch filters. Claim 4 includes the similar feature of “a second operative notch filter that attenuates the second acoustic feedback component as instructed by the second adaptive notch filter or the first channel element.”

Claims 12-26 are rejected by the Office Action under 35 U.S.C. 103(a) as allegedly being unpatentable over the combination of Miller and Prinssen as applied to claims 1-11 and further in view of U.S. 4,177,356 (Jaeger).

Applicant is amending claim 12 to have the feature of “sending the first set of filter parameters to the second channel element, wherein **the first set of filter parameters characterize the acoustic feedback.**” (Emphasis added.) The amendment is supported by the specification as originally filed, e.g., Paragraphs 30-31. The Office Action admits that (Page 5, section 17. Emphasis added.):

The combination of Miller and Prinssen teaches an automatic equalizer, wherein the first and second performance microphones and associated acoustic sources are found on a stage. Miller teaches the steps of detecting feedback, determining

filter parameters and adjusting the element to ameliorate the feedback. However, Miller does not explicitly state that an indicator is sent through the communication channel, but it is obvious that an indicator must be sent for the step of arbitration or synchronization (Col. 7, lines 55-57). Miller also does **not** teach that any filter parameters are sent to the second element. Jaeger teaches a signal enhancement system for audio singles. Jaeger does **not** teach a feedback suppression system. Jaeger teaches identical expander circuitry in both channels and [of] a system, which **provides the same amount of gain to expander circuits in both the left and right channels of a stereo signal**. The amount of gain is shared across the channels in its respective frequency band to preserve the stereo image (Col. 9, lines 53-58). It would have been obvious for one of ordinary skill in the art to combine the teachings of Miller and Prinsen with those of Jaeger for the purpose of high fidelity. The coefficients of an adaptive filter in one channel should be used in the other channel to preserve the stereo image.

However, the proposed modification cannot render the prior art unsatisfactory for its intended purpose. (MPEP §2143.01.) The modification proposed by the Office Action renders the prior art of Miller and Prinsen, when combined with Jaeger, unsatisfactory. As alleged by the Office Action, the combination of Miller and Prinsen teaches an automatic equalizer. The configuration of each channel, as suggested by Miller and Prinsen, is different because of spatial separation and variations in its environment and amplification system. However, Prinsen requires that the gains of the different channels be the same, thus rendering the prior art of Miller and Prinsen unsatisfactory. Moreover, as admitted by the Office Action, Jaeger fails to teach anything about a feedback suppression system, and Miller fails to teach anything about sending filter parameters to the second element. Because claims 13-25 ultimately depend from claim 12, claims 13-25 are patentable for at least the above reasons. Applicant requests for reconsideration of claims 12-25.

The Office Action further alleges (Page 8, section 31.):

Regarding new claim 26, see the preceding argument with respect to claims 1 and 12. The combination of Miller, Prinsen, and Jaeger teaches the features of adaptive notch filtering in two different feedback paths.

However, claim 26 includes the feature of “wherein first adaptive processing is performed by the first adaptive notch filter in parallel with second adaptive processing performed by the second adaptive notch filter and wherein one of the adaptive notch filters continues to detect an associated acoustic feedback component **while a second of the adaptive notch filters updates a filter configuration of a corresponding operative notch filter.**” (Emphasis added.) The combination of Miller, Prinssen, and Jaeger fails to suggest any interaction between notch filters. Applicant requests reconsideration of claim 26.

Conclusions

Applicant is adding claims 27 and 28, which are supported by the patent application as originally filed, e.g., Figure 2 and Paragraphs 23-26. All objections and rejections have been addressed. Hence, it is respectfully submitted that the present application is in condition for allowance, and a notice to that effect is earnestly solicited.

Respectfully submitted,

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